Remarks

This application has been reviewed in light of the Office Action of December 17, 2002. Claims 1-17 are pending. Claim 17 is withdrawn from consideration. Claims 15-16 are allowed, claim 6 is objected to, and claims 1-5 and 7-14 are rejected. In response, claims 1, 7-15, and 17 are amended; claim 6 is canceled, without prejudice; and new claims 18-20 are added. Reconsideration of this application, as amended, is requested. The arguments set forth herein are not applied to allowed claims 15-16.

Allowed claim 15 has been amended. Claim 15 was originally a dependent claim that was rewritten to incorporate the limitations of its parent claim 7 in a prior Amendment. In reviewing claim 15, it was noticed that the language of the dependent claim 15 was placed into the wrong location in the prior amendment, and that has been corrected. The twice-amended claim 15 has the same limitations as once-amended claim 15, but slightly rearranged. Claim 15 is also amended to clarify some antecedent basis aspects for dependent claims.

Restriction

Applicant elects to prosecute claims 1-16, with traverse of the restriction requirement.

The restriction is founded on the assertion that "a device with an infrared detector is mutually exclusive from a device receiving a color image..." This statement is technically not correct.

"Color" as used in the art simply refers to a wavelength, whether that color and wavelength are in the visible or in the infrared. In fact, the preferred embodiment of the two-color sensor system 20 employs an infrared detector 22, see page 4, lines 19-20 of the present Specification. This detector 22 is used in a two-color system, see page 4, line 22-page 5, line 4. Thus, a device with an infrared detector is not mutually exclusive from a device that processes a color image.

In any event, such a mutual exclusivity would not be a basis for a restriction. A restriction must be based on a determination that the claims in question are "independent and distinct" to maintain the restriction, 35 USC 121, 37 CFR 1.141, MPEP 802. There has been no such showing here or even addressing the legal issue.

Applicant is confident that the Examiner will correct this position, and has written claim 17 in independent form, amended claim 7 to add this limitation, and added similar dependent claims 18-19 in the present Amendment. The amendment to claim 17 is not an amendment which itself necessitates a new rejection, inasmuch as it only writes claim 17 in independent form. Applicant believes that claims 17-19 are allowable over the art of record.

Applicant asks that the Examiner withdraw the restriction requirement and examine all pending claims.

Art Rejections

Claims 1, 2, 4, and 5 are rejected under 35 USC 102 as anticipated by Williamson. Applicant traverses this ground of rejection.

Claim 1 is amended to incorporate the limitations of claim 6, which is objected to, and claim 6 is canceled. Applicant submits that claims 1-5 are allowable.

The explanation of the rejection makes reference to "well known" art in reference to claim 5. "Well known" is not a class of statutory prior art recognized in 35 USC 102 or 35 USC 103. Applicant traverses this substitution of asserted "well known" prior art for a statutory prior art reference as applied in the context of the claim. Applicant requests that, if the issue becomes important at a later time, the Examiner apply a statutory prior art reference. MPEP 2144.03.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claim 3 is rejected under 35 USC 103 over Williamson '433. Claim 3 depends from allowable claim 1, and is believed to be allowable. However, new claim 20

substantially contains the limitations of as-filed claim 3. Applicant will address this rejection as though applied to claim 20. As so interpreted, Applicant traverses this ground of rejection.

This rejection is based on an "obvious design choice" change to Williamson. Applicant traverses this assertion. The concept of "obvious matter of design choice" is not intended to substitute for statutory prior art. It provides a means by which one of several realistic alternatives presented by statutory prior art may be selected, absent surprising or unexpected advantages. It is to be used only where the applied statutory prior art sets forth a list of realistic alternative selections, and it would be a matter of design choice to select one member from the list. In this case, Williamson presents no such design choice, and accordingly the application of "obvious matter of design choice" is not appropriate here. This amounts to a "well known in the art" type of rejection. Applicant traverses this approach, and asks for the citation and application of proper statutory prior art or other evidence supporting the rejections, MPEP 2144.03. If the rejection is maintained, Applicant asks that the Examiner cite and apply statutory prior art, pursuant to MPEP 2144.03.

In the present approach, the selection of the rectangle-to-square transition of the optical fibers is a preferred case that produces improved resolution and spatial filtering of the image, and reduced integration time, a surprising and unexpected advantage. See discussion beginning at the sentence bridging pages 5-6 of the Specification, and extending to page 6, line 24. There is certainly no suggestion of the advantage of this approach in the prior art.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 7-13 are rejected under 35 USC 103 over Williamson in view of Unuma '463. Applicant traverses this ground of rejection.

Claims 8-13 have been amended to depend from allowed claim 15, and are therefore believed to be allowable.

Amended claim 7 recites in part:

"an imaging <u>infrared</u> detector which converts incident light energy into an electrical signal" [emphasis added]

Neither reference has any such teaching.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Applicant submits that the application is now in condition for allowance, and requests such allowance.

This paper is filed by the undersigned, who is not presently an attorney of record, pursuant to 37 CFR 1.34(a), MPEP 405, at the instruction of the attorney of record.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

underlined material is to be inserted, [bracketed] material is to be deleted, and --material set off by dashes-- is to be added.

Claims:

1. (Amended) A sensor system for viewing light energy from a scene, comprising:

a detector which converts incident light energy into an electrical signal, the detector including an imaging detector array;

an optical train that focuses the light energy of the scene; and

an optical fiber bundle having an input end that receives the scene from the optical train and an output end that directs the energy of the scene onto the detector array, the optical fiber bundle comprising a plurality of optical fibers wherein each fiber has an input shape and size at its input end and an output shape and size at its output end, the output shape and size being different from the input shape and size, and wherein the scene energy from the optical train is mapped nonlinearly onto the detector array.

Cancel claim 6, without prejudice.

7. (Amended) A sensor system for viewing light energy from a scene, comprising:

an imaging infrared detector which converts incident light energy into an electrical signal, the imaging detector having

a first-color region, and

a second-color region;

a first-color imaging system comprising:

a first-color filter positioned between the scene and the first-color region of the imaging detector,

a first-color optical train that focuses first-color scene energy onto the first-color region of the imaging detector, and

a first-color optical fiber bundle having a first-color input end that receives the first-color scene energy from the first-color optical train and a first-color output end that directs the first-color scene energy onto the first-color region of the imaging detector, wherein the first-color scene energy from the first-color optical train is mapped nonlinearly onto the first-color region of the imaging detector, the first-color optical fiber bundle comprising a plurality of first-color optical fibers wherein each of the first-color optical fibers has a first-color fiber input shape and size at its first-color input end and a first-color output shape and size at its first-color output end, the first-color output shape and size being different from the first-color input shape and size; and

a second-color imaging system comprising:

a second-color filter positioned between the scene and the second-color region of the imaging detector,

a second-color optical train that focuses second-color scene energy onto the second-color region of the imaging detector, and

a second-color optical fiber bundle having a second-color input end that receives the second-color scene energy from the second-color optical train and a second-color output end that directs the second-color scene energy onto the second-color region of the imaging detector, the second-color optical fiber bundle comprising a plurality of second-color optical fibers wherein each of the second-color optical fibers has a second-color fiber input shape and size at its second-color input end and a second-color output shape and size at its second-color output end, the second-color output shape and size being different from the second-color input shape and size.

8. (Amended) The sensor system of claim [7] <u>15</u>, wherein the first-color region of the imaging detector is sensitive to light energy that

passes through the first-color filter and light energy that passes through the second-color filter, and

the second-color region of the imaging detector is sensitive to light energy that passes through the first-color filter and light energy that passes through the second-color filter.

9. (Amended) The sensor system of claim [7] 15, wherein the first-color region and the second-color region are in the same plane.

10. (Amended) The sensor system of claim [7] 15, wherein each first-color fiber has its first-color fiber input shape substantially in the form of a rectangle and its first-color fiber output shape is substantially in the form of a square.

11. (Amended) The sensor system of claim [7] 15, wherein each second-color fiber has its second-color fiber input shape substantially in the form of a rectangle and its second-color fiber output shape is substantially in the form of a square.

12. (Amended) The sensor system of claim [7] 15, wherein the first-color fiber input size of the first-color optical fibers is larger than the first-color fiber output size of the first-color optical fibers.

13. (Amended) The sensor system of claim [7] 15, wherein the second-color fiber input size of the second-color optical fibers is larger than the second-color fiber output size of the second-color optical fibers.

14. (Amended) The sensor system of claim [7] 15, wherein the sensor system further includes

an electronic device operable to read the electrical signal of the imaging detector, and

image-processing electronics.

15. (Twice Amended) A sensor system for viewing light energy from a scene, comprising:

an imaging detector which converts incident light energy into an electrical signal, the imaging detector having

a first-color region, and

a second-color region;

a first-color imaging system comprising:

a first-color filter positioned between the scene and the first-color region of the imaging detector,

a first-color optical train that focuses first-color scene energy onto the first-color region of the imaging detector[, wherein the first-color scene energy from the first-color optical train is mapped nonlinearly onto the first-color region of the imaging detector], and

a first-color optical fiber bundle having a first-color input end that receives the first-color scene energy from the first-color optical train and a first-color output end that directs the first-color scene energy onto the first-color region of the imaging detector, <u>wherein the first-color scene energy from the first-color optical train is mapped nonlinearly onto the first-color region of the imaging detector,</u> the first-color optical fiber bundle comprising a plurality of first-color optical fibers wherein each of the first-color optical fibers has a first-color fiber input shape and <u>a first-color fiber input</u> size at its first-color input end and a first-color output shape and <u>first-color fiber output</u> size at its first-color output end, the first-color output shape and <u>the first-color fiber output</u> size being different from the first-color input shape and <u>the first-color fiber input</u> size; and

a second-color imaging system comprising:

a second-color filter positioned between the scene and the second-color region of the imaging detector,

a second-color optical train that focuses second-color scene energy onto the second-color region of the imaging detector, and

a second-color optical fiber bundle having a second-color input end that receives the second-color scene energy from the second-color optical train and a second-color output end that directs the second-color scene energy onto the second-color region of the imaging detector, the second-color optical fiber bundle comprising a plurality of second-color optical fibers wherein each of the second-color optical fibers has a second-color fiber input shape and <u>a second-color fiber input</u> size at its second-color input end and a second-color output shape and <u>a second-color fiber output</u> size at its second-color output end, the second-color output shape and <u>the second-color fiber output</u> size being different from the second-color input shape and <u>the second-color fiber input</u> size.

17. (Amended) <u>A sensor system for viewing light energy from a scene, comprising:</u>

<u>an imaging</u> [The sensor system of claim 1, wherein the detector is an] infrared [imaging detector] <u>detector which converts incident light energy into an electrical signal, the detector including an imaging detector array;</u>

<u>an optical train that focuses the light energy of the scene; and</u>

<u>an optical fiber bundle having an input end that receives the scene from the optical train and an output end that directs the energy of the scene onto the detector array, the optical fiber bundle comprising a plurality of optical fibers wherein each fiber has an input shape and size at its input end and an output shape and size at its output end, the output shape and size being different from the input shape and size</u>.

Add the following new claims:

--18. (New) The sensor system of claim 15, wherein the detector is an infrared imaging detector.--

--19. (New) The sensor system of claim 16, wherein the detector is an infrared imaging detector.--

--20. (New) A sensor system for viewing light energy from a scene, comprising:

a detector which converts incident light energy into an electrical signal, the detector including an imaging detector array;

an optical train that focuses the light energy of the scene; and

an optical fiber bundle having an input end that receives the scene from the optical train and an output end that directs the energy of the scene onto the detector array, the optical fiber bundle comprising a plurality of optical fibers wherein each fiber has a rectangular input shape at its input end and a square output shape at its output end.--